

and die. Damage to the whole nursery is enormous and rapid.

Application of 10 per cent BHC-dust @ 12.5 kg./ha applied in a line along the pearl millet rows in combination with careful watch and scaring with sounds made by the beating of empty drums immediately after sowing have provided significant protection against sparrows

and the seeds germinated well and grew without any loss.

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ALL INDIA COORDINATED MILLET
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15. BIRD DAMAGE IN MAIZE

INTRODUCTION

The Roseringed Parakeet (*Psittacula krameri*) as a bird pest of Maize (*Zea mays*) has been reported by Salim Ali (1974), but the nature and extent of damage is not known. Studies to determine this were undertaken at the Andhra Pradesh Agricultural University at Hyderabad since 1974 and the results obtained are presented here.

MATERIAL AND METHODS

Studies on the bird visitants in Maize were conducted at Maize Research Station, Amberpet, (Hyderabad) during Kharif and Rabi 1974-75 in an area of 900.00 sq. metres and

2190.00 sq. metres respectively. A unit area of 25 x 25 sq. metres was demarcated in a maize field in Kharif and Rabi season for counting birds. The percentage of damage was assessed and compared for the two seasons (Kharif and Rabi) by taking counts of healthy and damaged cobs in this unit area. The bird counts were made in the morning and evening only, since preliminary studies made from dawn to dusk showed these to be the feeding hours. The observations were made with 7 x 50 magnification field binocular to watch the bird pests from a distance. The studies were carried out during the peak hours bird visits from 6 a.m. to 10 a.m. in the morning and 3.00 p.m. to 6.00 p.m. in the afternoon. The

TABLE 1
POPULATION DATA OF BIRD VISITANTS IN MAIZE CROP AT MAIZE RESEARCH STATION, AMBERPET IN KHARIF AND RABI SEASONS

Date	House Crow										Roseringed Parakeet										Indian Myna									
	Morning					Evening					Morning					Evening					Morning					Evening				
	6-7	7-8	8-9	9-10	3-4	4-5	5-6	Total			6-7	7-8	8-9	9-10	3-4	4-5	5-6	Total			6-7	7-8	8-9	9-10	3-4	4-5	5-6	Total		
Kharif — 1974-75																														
15-x-1974	24	23	25	25	25	22	15	159			5	6	5	3	6	2	5	32			15	8	7	9	10	13	15	77		
16-x-1974	78	91	98	78	20	40	62	467			10	5	5	—	4	10	12	46			10	5	7	3	10	8	4	47		
17-x-1974	25	63	70	75	16	39	60	348			2	3	2	1	4	12	10	34			2	1	3	—	10	8	4	28		
18-x-1974	38	83	76	67	30	48	52	394			2	3	1	—	2	4	6	18			2	1	2	—	8	6	4	23		
19-x-1974	49	69	89	81	40	48	52	428			2	1	3	2	8	9	11	36			3	4	2	1	6	8	—	24		
20-x-1974	50	70	81	86	25	40	58	410			2	2	3	1	6	7	9	30			4	5	6	2	9	7	—	33		
Rabi — 1974-75																														
23-iii-1975	2	1	1	—	—	1	2	7			5	3	2	1	—	1	4	16			—	—	—	—	—	—	—	—	—	
24-iii-1975	2	1	—	—	—	—	1	4			3	2	1	—	—	1	3	10			—	—	—	—	—	—	—	—	—	
25-iii-1975	1	2	—	—	—	1	1	5			4	3	1	1	—	2	5	16			—	—	—	—	—	—	—	—	—	
26-iii-1975	1	1	—	—	—	—	2	4			3	1	1	—	—	1	2	8			—	—	—	—	—	—	—	—	—	
27-iii-1975	2	1	—	—	—	—	1	4			4	1	—	—	—	2	3	10			—	—	—	—	—	—	—	—	—	
28-iii-1975	1	—	—	—	—	1	1	3			2	1	—	—	—	1	2	6			—	—	—	—	—	—	—	—	—	
29-iii-1975	1	—	—	—	—	—	1	2			2	1	—	—	—	1	2	6			—	—	—	—	—	—	—	—	—	

method adopted for assessing the population in the field was by visual counting. For each bird species the population of birds per hour indicates the total number of a particular bird pest species which visited the fields in different groups at different junctures during the particular hour.

RESULTS AND DISCUSSION

The data recorded showed that the pigeons (*Columba livia*) and House Crows (*Corvus splendens*) were the first to invade the crop after sowing and cause damage at the germination and seedling stages. These pests picked the seed from the field after the post-sowing irrigation and fed on the soaked seeds which were in the process of germination. They also pluck out the developing young seedlings. Damage by these birds was not noticed in the subsequent phases of crop growth.

At the flowering stage, the Roseringed Parakeets (*Psittacula krameri*) infest the male inflorescence (Tassel) and feed on the anthers and pollen grains. At the tender cob stage, the parakeets damage the cobs with the silky style and green husk. This type of damage was negligible compared to the damage at the subsequent milky stage of the cob when they split and strip away the covering (bracts) thereby exposing the grain for easy feeding and further damage. This type of feeding is continued upto maturity of the cob but maximum damage was recorded at the dough stage of the cobs.

Data recorded on the population density of the birds infesting maize crop at the dough stage during the various periods of the day are summarised in Table 1. Damage by crows

started after the grains in the cob attained the dough stage. Crows prefer the cobs in which damage was already initiated by parakeets and in such cobs they completely removed the spathes, exposed the cob and ate the grains. However, crows damaging a fresh healthy cob from the apical portion by pulling down the green spathes, is not uncommon. During this process, each green spathe is torn into small pieces to expose the grains fully. Mynas (*Acridotheres tristis*) also visited the crop but only in small numbers and they were mostly seen picking the insects from the fields and occasionally eating a few maize grains.

The damage to maize crop due to bird pests at the cob stage was assessed by taking counts of healthy and damaged cobs in the unit area. The extent of damage in terms of cobs was 82.46% in Kharif and 11.47% in Rabi under unprotected conditions in the field. The higher percentage damage in Kharif can be attributed to a convincingly high population of birds infesting the crops during the Kharif season (Table 1). Further, the standing paddy crop adjacent to the Maize plots in dough stage also served as a source of food for parakeets.

It is inferred from the foregoing that House Crows and Roseringed Parakeets are the major bird pests of maize as observed at the Maize Research Station, Amberpet. However a survey carried out in the cultivators' field in major maize growing areas in Telangana (Karimnagar and Medchal districts) and also as reported by the farmers have shown that crows are not a pest in maize when the crop is grown in large acreage. In experimental plots or in maize crops raised near human habitations, damage by crows may also be evident.

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16. BIRD FAUNA OF THE RICE CROP ECOSYSTEM IN
PONDICHERRY REGION

In the rural economy of an agriculturist birds play a vital role since some birds are beneficial or useful to him and others claim a heavy toll of his produce. In this paper an attempt is made to list out the common species of birds both resident and migratory in this region. A detailed observation was made for the insectivorous avian fauna visiting the rice ecosystem throughout the years of 1978-80. The principal agro-ecosystem in Pondicherry region is rice-based and the irrigation needs are met mostly by Ousteri and Bahour tanks and by a network of tube wells. Light rains are received in the South-West monsoon months of July to September and heavy rains during the North-East monsoon months of October to December. The total annual precipitation is around 1200 mm. During the rainy months, the tanks get filled up. From May to February the double cropped wetlands receive canal water and the third crop receives water from tube wells. In some areas of this region paddy remains in fields throughout the year which supports a rich aquatic biome. The aquatic biome of the rice ecosystem

includes the invertebrate fauna comprising insect pests like stem borers, leaf rollers, plant hoppers, earhead bugs, blackbugs, grasshoppers etc. The non-pest fauna include waterbugs, beetles, odonates and a variety of other insects. The paddy fields and water storing tanks also harbour fishes, crabs, frogs, snakes and aquatic insects which provide the conditions to attract a host of insectivorous birds to this region. The observations were made in the farm attached to the Krishi Vigyan Kendra and its vicinity, Ousteri and Bahour tanks, and in the different communes like Villianoor, Ariankuppam, Nettapakkam etc. The birds are classified in the following groups.

1. Very common — Seen in large numbers
2. Common — Seen in less numbers
3. Less common — Seen in less numbers
and only in certain
places
4. Rare — Seen in singles or in
few in numbers occa-
sionally.

The birds were compared for identity and